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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/942,030	08/30/2001	Takafumi Matsumura	381AS/50350	7268

7590 12/05/2002
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EXAMINER

DOUGHERTY, ANTHONY T

ART UNIT PAPER NUMBER

2863

DATE MAILED: 12/05/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/942,030

Applicant(s)

MATSUMURA ET AL.

Examiner

Anthony T. Dougherty

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 40, 41, 44, and 45 is/are allowed.
- 6) ☒ Claim(s) 1-39, 42 and 43 is/are rejected.
- 7) ☒ Claim(s) 43 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: Page 36 line 17 Fig. 3 is referenced, it is assumed by the examiner that this is a typographical error and Figure 13 was intended.

Appropriate correction is required.

Claim Objections

2. Claim 43 objected to because of the following informalities: It is assumed by the examiner that claim 43 should depend from claim 39 instead of claim 40 and that this is a typographical error in the claim since there is insufficient antecedent basis for the limitation "external data communication terminals" in line 2 of the claim. The claim has been treated by the examiner as if it read "The gas flow meter according to claim 39". Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 2, 15-27, 28/17, 29-39, 42 and 43 rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,911,238 to Bump et al.

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With regard to claims 1 and 2, Bump et al. discloses a gas flow detection circuit for detecting a current and voltage of a resistor installed in a gas passage (see column 6 line 13 through line 18 and column 8 line 17 through line 18), noise reduction circuitry (see column 14 line 34 through line 41), a digital conversion circuit for converting the output of a gas flow detection into a digital signal (see column 8 line 20 through line 21), and a digitally adjusting circuit for outputting a voltage (see column 8 line 24 through line 35), it is also inherent to Bump et al. that a reference voltage be supplied from a regulator circuit to the digital conversion means since any digital conversion means must have a reference voltage supplied from a regulator to do the conversion.

With regard to claims 15-27, 28/17, 29-39, 42, and 43 Bump et al. discloses a gas flow detection circuit for outputting a voltage signal representing gas flow (see column 8 line 17 through line 18), a digital adjusting circuit for adjusting the detected gas flow signal (see column 8 line 20 through line 21 and column 8 line 24 through line 35), more than two ranges of input for the voltage signal entered into the digital adjustment circuitry with a different adjustment for each range set in advance (see column 9 line 35 through line 37 and column 10 line 31 through line 51), a temperature sensor which has its output digitized and used in performing the adjustment calculation (see column 8 line 22 through line 24 and column 10 line 18 through line 20), a programmable storage device for storing parameters related to the digital adjustment (see column 8 line 26 through line 31), and a data input/output circuit for writing adjust data to and from internal circuitry to the outside (see column 14 line 34 through line 41).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 3-14, and 28/13 rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,911,238 to Bump et al. in view of "Road Vehicles – Electrical Disturbance by Conduction and Coupling", International Standard, June 1, 1990 (hereinafter International Standard), further in view of Japanese Patent No. JP9307361 to Naomi.

With regard to claims 3-14, and 28/13, the primary reference to Bump et al. discloses a gas flow detection circuit for detecting a gas flow through a gas passage, an adjusting circuit for adjusting an output characteristic, and a programmable storage device for storing parameters related to the digital adjustment (see column 8 line 1 through line 41; column 10 line 31 through line 51).

The secondary reference to International Standard discloses recommendations for over-voltage protection and noise reduction (see section 5).

The tertiary reference to Naomi discloses another over-voltage protection circuitry (see Figure 1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Bump et al. by including over-voltage protection and noise reduction circuitry.

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Accordingly, such a modification would have been obvious since both International Standard and Naomi teach that these were well known methods in the art of eliminating noise to get more accurate results and providing over-voltage protection to keep circuitry working even when it is subjected to voltage parameters it was not designed for, thereby suggesting the obviousness of the modification.

Allowable Subject Matter

7. Claims 40, 41, 44, and 45 allowed.

8. The following is a statement of reasons for the indication of allowable subject matter:

With regard to claims 40 and 41, the inclusion of an adjusting circuit which receives from a detected gas flow a ratiometric analog output, a non-ratiometric analog output, and a digital output and selects one by a means provided in the adjusting circuit distinguishes these claims over the prior art.

With regard to claim 44, the inclusion of a digital conversion circuit with means for selecting a single-phase or differential input distinguishes this claim over the prior art.

With regard to claim 45, the inclusion of an analog conversion circuit for receiving an adjusted digital signal and converting it into an analog signal where the analog conversion circuit is driven by a voltage based on an external reference voltage provided by a voltage follower arranged between a reference voltage terminal and a power supply terminal, these limitations in combination distinguishes this claim over the prior art.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent No. 4,896,282 to Orwell because it discloses a digital flow meter with calibration.

U.S. Patent No. 5,263,369 to Cutler because it discloses a digital flow meter with non-linearity correction.

U.S. Patent No. 5,347,843 to Orr et al. because it discloses a digital flow meter with a combined analog and digital adjustment.

U.S. Patent No. 5,975,126 to Bump et al. because it discloses a digital flow meter that uses an empirically derived function for adjustment.


U.S. Patent No. 6,343,617 to Tinsley et al. because it discloses a digital flow meter with an electronic control system for adjustment.

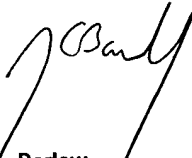
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony T. Dougherty whose telephone number is (703) 305-4020. The examiner can normally be reached on Monday through Friday from 8 to 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E. Barlow can be reached on (703) 308-3126. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 305-3431 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.


atd
November 27, 2002


John Barlow
Supervisory Patent Examiner
Technology Center 2800